

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2004/004145

International filing date (day/month/year)  
28.09.2004

Priority date (day/month/year)  
29.09.2003

International Patent Classification (IPC) or both national classification and IPC  
B01F5/00, C22B3/02, B01F3/12

Applicant  
KCC GROUP LIMITED

#### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 68.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

#### 3. For further details, see notes to Form PCT/ISA/220.

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10/573716

REC'D PCT/PTO 28 MAR 2006

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**International application No.  
PCT/GB2004/004145**Box No. 1 Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/004145

**Box No. II Priority**

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ The International Searching Authority has not been able to consider the validity of the priority claim because a copy of the earlier application whose priority has been claimed was not available to the International Searching Authority at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

see separate sheet

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/004145

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial  
applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 5-10

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
- ☐ the description, claims or drawings (indicate particular elements below) or said claims Nos. are so unclear that no meaningful opinion could be formed (specify):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 5-10
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
  - the written form ☐ has not been furnished
  - ☐ does not comply with the standard
  - the computer readable form ☐ has not been furnished
  - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/004145

**Box No. IV Lack of unity of invention**

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

☐ paid additional fees.

☐ paid additional fees under protest.

☒ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

☐ complied with

☒ not complied with for the following reasons:

see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

☐ all parts.

☒ the parts relating to claims Nos. 1-4,11,12

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)

Yes: Claims 4  
No: Claims 1-3,11,12

Inventive step (IS)

Yes: Claims  
No: Claims 1-4,11,12

Industrial applicability (IA)

Yes: Claims 1-4,11,12  
No: Claims

**2. Citations and explanations**

see separate sheet

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/004145

Reference is made to the following documents:

D0: WO-A-03/101868

D1: US-A-4 053 142

D2: EP-A-498 024

**Item II**

Serious doubts may be raised concerning the validity of the priority claim of 29.09.03 (GB0322754) for at least the subject matter of claim 1 insofar as the claimed apparatus has been disclosed in the earlier specification D0, itself claiming the earlier priority date of 31.05.02 (GB0212728.0). The rights of the applicant of D0 (Dynamic Processing Solutions PLC) have been transferred to the present applicant.

**Item IV**

1. The application relates to an apparatus which is suitable for enhancing solubility of a solute in a solvent. The apparatus as claimed is primarily defined through its apparatus feature of comprising an inlet having a fluidising unit which creates a vortex (claim 1). The subject matter of the dependent claims relates to process and use features such as the nature of the solute or the solvent and to the use in the metal leaching, food, drink and agricultural fields.

An apparatus comprising an inlet having a fluidising unit which creates a vortex in a solvent or a solute is known from D1, in particular Figure 2 with an inlet 18 and a fluidising unit 22.

Consequently, the concept linking the claims is not new and does not qualify as a single general inventive concept within the meaning of Rule 13 PCT.

2. The following groups of inventions are therefore identified:

- 1) Claims 1 to 4, 11 and 12: apparatus in particular suitable for the leaching of ore;

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- 2) Claim 5: apparatus in particular suitable for dissolving salt (solute) in water (solvent);
- 3) Claims 6 to 8: apparatus in particular suitable for use with edible or potable solute in the food and drink industries;
- 4) Claims 9 and 10: apparatus in particular suitable for pressurised treatment of seeds prior to sowing.

**Item V - for claims 1 to 4, 11 and 12**

1. As indicated under Item IV, an apparatus as claimed in claim 1 is known from D1, Figure 2. Although D1 does not specifically describe any enhancing of the solubility of a solute in a solvent, it discloses the apparatus features of claim 1 and it is suitable for enhancing the solubility of a solute in a solvent.

A fluid interfacial or boundary layer within the vortex as claimed in claim 2 will also exist in the vortex created in D1. A continuous operation is also described in D1 (see abstract)

Consequently, the subject matter of claims 1, 2 and 11 is not new in view of D1 (Art.33(2) PCT).

2. The use of a vortex in a leaching process of ores is known from D2. Figure 1 shows an apparatus with channels 128 for the slurried ore, a channel 122 for additional solvent and a channel 124 for a pressurised gas mixture. These channels meet at the inlet of a mixing chamber 112 in which a vortex is created ("Verwirbelungskammer"). The use of this apparatus leads to an improved leaching of metal from ores, slurries, deposits and ashes (claim 1). Consequently D2 is also novelty destroying to the subject matter of claims 1 to 3 and 11 (Art.33(2) PCT).
3. The means claimed in claim 4 to achieve at least two stages of leaching are well-known in the field of hydrometallurgy. Because of the presence of different metals in the ores, it is standard to perform several stages of leaching with different solvents in



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order to extract the different metals. No inventive step is therefore seen in the subject matter of claim 4 (Art.33(3) PCT).

4. Claim 12 refers to the description and to the drawings, contrary to the requirements of Rule 6.2(a) PCT.



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